

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. – 10. (Cancelled)

11. (New) A substrate including a plurality of concave portions, the plurality of concave portions being formed on the substrate by an etching process so that the plurality of concave portions are randomly arranged on the substrate, the plurality of concave portions being used for manufacturing microlenses,

wherein a standard deviation that is obtained using a large number of distances between two arbitrary and adjacent concave portions is more than 3% of an average value of the large number of distances.

12. (New) The substrate as claimed in claim 11, wherein concave portions formed with a temporal difference are mixed in the plurality of concave portions.

13. (New) The substrate as claimed in claim 12, wherein the concave portions formed with the temporal difference are arranged so that edge portions thereof overlap each other.

14. (New) The substrate as claimed in claim 11, wherein the substrate has a usable area in which all of the plurality of concave portions are formed, and a ratio of an

area occupied by all of the plurality of concave portions in the usable area to an entire usable area is at least 90% when viewed from a top of the substrate.

15. (New) A substrate including a plurality of concave portions, the plurality of concave portions being formed on the substrate by an etching process so that the plurality of concave portions are randomly arranged on the substrate, the plurality of concave portions being used for manufacturing microlenses,

wherein concave portions formed with a temporal difference are mixed in the plurality of concave portions.

16. (New) The substrate as claimed in claim 15, wherein the concave portions formed with the temporal difference are arranged so that edge portions thereof overlap each other.

17. (New) The substrate as claimed in claim 15, wherein the substrate has a usable area in which the plurality of concave portions and the concave portions formed with the temporal difference are formed, and a ratio of an area occupied by all of the concave portions in the usable area to an entire usable area is at least 90% when viewed from a top of the substrate.

18. (New) A substrate including a plurality of concave portions, the plurality of concave portions being formed on the substrate by an etching process so that the

plurality of concave portions are randomly arranged on the substrate, the plurality of concave portions being used for manufacturing microlenses,

wherein the plurality of concave portions are formed by a first etching process, second concave portions formed by a second etching process are formed between the plurality of concave portions formed by the first etching process, and the second etching process is carried out after the first etching process so the second concave portions are mixed in the plurality of concave portions, and

the substrate has a usable area in which the plurality of concave portions and the second concave portions are formed and a ratio of an area occupied by all concave portions in the usable area to an entire usable area is at least 90% when viewed from a top of the substrate.

19. (New) A microlens substrate including a plurality of microlenses arranged on the substrate in an optically random order, the microlens substrate being manufactured using the substrate with a plurality of concave portions defined by claim 11.

20. (New) A transmission screen comprising the microlens substrate defined by claim 19.

21. (New) The transmission screen as claimed in claim 20, further comprising a Fresnel lens portion with a Fresnel lens, the Fresnel lens portion having an emission

face and the Fresnel lens being formed in the emission face wherein the microlens substrate is arranged on the emission face side of the Fresnel lens portion.

22. (New) The transmission screen as claimed in claim 20, wherein the diameter of each of the microlenses is in a range of 10 to 500 μm .

23. (New) A rear projector comprising the transmission screen defined by claim 20.

24. (New) The rear projector as claimed in claim 23, further comprising:
a projection optical unit; and
a light guiding mirror.

25. (New) A microlens substrate including a plurality of microlenses arranged on the substrate in an optically random order, the microlens substrate being manufactured using the substrate with a plurality of concave portions defined by claim 15.

26. (New) A transmission screen comprising the microlens substrate defined by claim 25.

27. (New) The transmission screen as claimed in claim 26, further comprising a Fresnel lens portion with a Fresnel lens, the Fresnel lens portion having an emission

face and the Fresnel lens being formed in the emission face wherein the microlens substrate is arranged on the emission face side of the Fresnel lens portion.

28. (New) The transmission screen as claimed in claim 26, wherein the diameter of each of the microlenses is in a range of 10 to 500 μ m.

29. (New) A rear projector comprising the transmission screen defined by claim 26.

30. (New) The rear projector as claimed in claim 29, further comprising:
a projection optical unit; and
a light guiding mirror.

31. (New) A microlens substrate including a plurality of microlenses arranged on the substrate in an optically random order, the microlens substrate being manufactured using the substrate with a plurality of concave portions defined by claim 18.

32. (New) A transmission screen comprising the microlens substrate defined by claim 31.

33. (New) The transmission screen as claimed in claim 32, further comprising a Fresnel lens portion with a Fresnel lens, the Fresnel lens portion having an emission

face and the Fresnel lens being formed in the emission face wherein the microlens substrate is arranged on the emission face side of the Fresnel lens portion.

34. (New) The transmission screen as claimed in claim 32, wherein the diameter of each of the microlenses is in a range of 10 to 500 μ m.

35. (New) A rear projector comprising the transmission screen defined by claim 32.

36. (New) The rear projector as claimed in claim 35, further comprising:
a projection optical unit; and
a light guiding mirror.

37. (New) A method of manufacturing a substrate with a plurality of concave portions, the method comprising the steps of:

preparing a substrate;

forming a first mask on the substrate;

forming a plurality of first initial holes in the first mask by one of a physical method and an irradiation with laser beams;

forming a plurality of first concave portions in the substrate by subjecting the substrate provided with the first mask having the plurality of first initial holes therein to a first etching process;

removing the first mask after the first etching process;

forming a second mask on the substrate in which the plurality of first concave portions have already been formed;

forming a plurality of second initial holes in the second mask by one of a physical method and an irradiation with laser beams;

forming a plurality of second concave portions in the substrate by subjecting the substrate provided with the second mask having the plurality of second initial holes therein to a second etching process; and

removing the second mask after the second etching process.

38. (New) A substrate with a plurality of concave portions, the substrate being manufactured using the method defined by claim 37.